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Atty. Docket No.:
HMSU-P14-006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Ingham, et al)
Serial No.: 09/711724) Group Art Unit: 1646
Filed: 23-Nov-2000) Examiner: To Be Assigned
Title: VERTEBRATE EMBRYONIC)
PATTERN-INDUCING PROTEINS)
AND USES RELATED THERETO)
)
)

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CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

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INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. 1.97(b)

Submitted herewith on Form PTO-1449 is a list of documents known to Applicants, their Agent and/or Attorney in compliance with the requirements of 37 C.F.R. 1.56. A copy of each document listed is also being submitted herewith.

This Information Disclosure Statement is being filed before the mailing date of the first Office Action on the merits, therefore, no fee is due.

Applicants respectfully request that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached Form PTO-1449.



This submission does not represent that a search has been made or that no better art exists. Nor does it constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the documents as prior art against any claim in the application and applicants determine that the cited documents do not constitute "prior art" under United States law, Applicants reserve the right to present to the Office the relevant facts and law regarding the appropriate status of such documents.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fees due in connection with the filing of this Statement, please charge the fees to our **Deposit Account, No. 18-1945.**

Respectfully submitted,
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Form PTO-1449

INFORMATION DISCLOSURE CITATION

PRIORITY APPLICATION

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Docket Number (Optional)
HMSU-P14-006Application Number
09/711724Applicant
Ingham et al.Filing Date
23-Nov-2000Group Art Unit
1646

U.S. PATENT DOCUMENTS

EXAMINER TRADEMARK OFFICE	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
AA	5,223,408	6/29/93	Goddell et al.	435	69.3	11-Jul-1991
AB	5,585,087	12/17/96	Lustig et al.	424	9.2	08-Jun-1994

FOREIGN PATENT DOCUMENTS

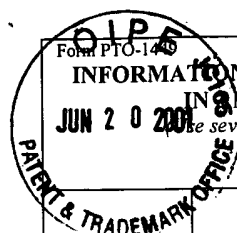
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						YES	NO
AC	WO 90/02809	3/22/90	PCT	C12P	21/00		
AD	WO 92/15679	9/17/92	PCT	C12N	15/10		

OTHER DOCUMENTS

(Including Author, Title, Date, Pertinent Pages Etc.)

AE	Anderson, R. et al., "Maintenance of ZPA signaling in cultured mouse limb bud cells", <i>Devel.</i> <u>117</u> :142-1433 (1993).
AF	Angier, N. "Biologists find key genes that shape patterning of embryos", <i>New York Times</i> , Jan 11, 1994, C-1.
AG	Basler, K.I., and G. Struhl, "Compartment boundaries and the control of <i>Drosophila</i> limb pattern by <i>hedgehog</i> protein", <i>Nature</i> <u>368</u> :208-214 (1994).
AH	Basler, K. et al., "Control of Cell Pattern in the Neural Tube: Regulation of Cell Differentiation by <i>dorsalin-1</i> , a Novel TGF β Family Member", <i>Cell</i> <u>73</u> : 687-702 (May 21, 1993).
AI	Bass, S. et al., "Hormone phage: An Enrichment Method for Variant Proteins with Altered Binding Properties", <i>PROTEINS: Structure, Function, and Genetics</i> <u>8</u> :309-314 (1990).
AJ	Bejsovec, A. and E. Wieschaus, "Segment polarity gene interactoins modulate epidermal patterning in <i>Drosophila</i> embryos", <i>Devel.</i> <u>119</u> :501-517 (1993).
AK	Bienz, M., "Homeotic genes and positional signalling in the <i>Drosophila</i> viscera", <i>TIG</i> <u>10</u> :22-26 (Jan. 1994).
AL	Bitgood, M. and McMahon, A., "Hedgehod and Bmp Genes are Coexpressed at Many Diverse Sites of Cell-Cell Internation in the Mouse Embryo", <i>Dev. Biol.</i> <u>172</u> (1):126-138 (1995).
AM	Blair, S.S., "Hedgehog digs up an old Friend", <i>Nature</i> <u>373</u> :656-657 (23 Feb. 1995).
AN	Bowie et al., "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions", <i>Science</i> <u>247</u> :1306-1310
AO	Brand-Saberi, B. et al., "The ventralizing effect of the notochord on somite differentiation in chick embryos", <i>Anat. Embryol.</i> <u>188</u> :239-245 (1993).

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		Filing Date 23-Nov-2000	Group Art Unit 1646
JUN 20 2001 PATENT & TRADEMARK OFFICE	AP	Brookes, J., "We may not have a morphogen", <i>Nature</i> <u>350</u> :15 (1991).	
	AQ	Bumcrot, D.A. and McMahon A. "Sonic Hedgehog: Making the gradient", <i>Chemistry and Biology</i> <u>3</u> (1):13-16 (Jan. 1996).	
	AR	Bumcrot, D.A. and McMahon, A., "Sonic signals somites", <i>Curr. Biol.</i> <u>5</u> (6):612-614 (June 1995).	
	AS	Bumcrot, D.A. et al., "Proteolytic Processing yields two secreted forms on sonic Hedgehog", <i>Mol. Cell. Biol.</i> <u>15</u> (4):2294-2302 (4/95).	
	AT	Chang et al., Products, genetic linkage and limb patterning activity of a murine hedgehog gene, <i>Development</i> 120:3339-3353, Nov. 1994.	
	AU	Charité, J. et al., "Ectopic Expression of <i>Hoxb-8</i> Causes Duplication of the ZPA in the Forelimb and Homeotic Transformation of Axial Structures", <i>Cell</i> <u>78</u> :589-601 (1994).	
	AV	Coffman et al., "Xotch, the Xenopus homolog of Drosophila notch", <i>Science</i> <u>249</u> :1438-1441 (1990)	
	AW	Concordet, J. and Ingham, P., "Developmental biology. Patterning goes sonic", <i>Nature</i> <u>375</u> (6529):279-280 (May 1995)	
	AX	Creighton, T.E., <i>Proteins Structures and Molecular Principles</i> , W.H. Freeman and Company: New York, NY, pp. 223-227.	
	AY	Currie et al., "Induction of a specific muscle cell type by a hedgehog-like protein in zebrafish", <i>Nature</i> <u>383</u> :452-455 (1996)	
	AZ	Curry et al., "Sequence analysis reveals homology between two proteins of the flagellar radial spoke", <i>Mol. Cell. Biol.</i> <u>12</u> :3967-3977 (1992)	
	BA	Davidson, E.H., "How embryos work: a comparative view of diverse modes of cell fate specification", <i>Devel.</i> <u>108</u> :365-389 (1990)	
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	BC	Dickinson W., "Molecules and morphology: Where's the homology", <i>TIG</i> <u>11</u> , (4):119-120 (1995)	
	BD	Dingemans, M.A. et al., "The expression of liver-specific genes within rat embryonic hepatocytes in a discontinuous process", <i>Differentiation</i> <u>56</u> :153-162 (1994)	
	BE	Dollé, P. et al., "Coordinate expression of the murine <i>Hox-5</i> complex homoeobox-containing genes during limb pattern formation", <i>Nature</i> <u>342</u> :767-772 (1989)	
	BF	Dollé, P. et al., "Disruption of the <i>Hoxd-13</i> Gene Induces Localized Heterochrony Leading to Mice with Neotenic Limbs", <i>Cell</i> <u>75</u> : 431-441 (Nov. 5, 1993).	



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BG	Echelard, Y. et al., "Sonic Hedgehog, a member of a family of putative signaling molecules, is implicated in the regulation of CNS polarity", <i>Cell</i> <u>75</u> :1417-1430 (1993)
BH	Ekker, S. et al., "Distinct expression and shared activities of members of the hedgehog gene family of xenopus laevis", <i>Devel.</i> <u>121</u> (8):2337-2347 (Aug 1995)
BI	Ericson, J. Et al., "Sonic hedgehog induces the differentiation of ventral forebrain neurons: a common signal for ventral patterning within the neural tube", <i>Cell</i> <u>81</u> (5):747-756 (June 1995)
BJ	Ettelaie, C. et al., "The effect of lipid peroxidation and lipolysis on the ability of lipoproteins to influence thromboplastin activity", <i>Biochim. Biophys. Acta.</i> <u>1257</u> (1):25-30 (June 1995)
BK	Fahrner, K. et al., "Transcription of <i>H-2</i> and <i>Qa</i> genes in embryonic and adult mice", <i>EMBO J.</i> <u>6</u> :1265-1271 (1987)
BL	Fallon, J.F. et al., "FGF-2: Apical ectodermal ridge growth signal for chick limb development", <i>Science</i> <u>264</u> :104-107(1994)
BM	Fan, C. et al., "Long-range sclerotome induction by sonic hedgehog: Direct role of the amino-terminal cleavage product and modulation by the cyclic AMP signaling pathway", <i>Cell</i> <u>81</u> : 457-465 (5 May 1995)
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BO	Forbes, A.J., et al., "Genetic analysis of <i>hedgehog</i> signalling in the <i>Drosophila</i> embryo", <i>Devel.</i> <u>119</u> (Supp.): 115-124 (1993)
BP	Francis, P.H. et al., "Bone morphogenetic proteins and a signalling pathway that controls patterning in the developing chick limb", <i>Devel.</i> <u>120</u> :209-218 (1994)
BQ	Gallop, J., et al., "Applications of combinatorial technologies to drug discovery. 1. Background and peptide combinatorial libraries", <i>J. of Mec. Chem.</i> <u>37</u> (9):1233-1251 (1994)
BR	Gérard, M. et al., "Structure and activity of regulatory elements involved in the activation of the <i>Hoxd-11</i> gene during late gastrulation", <i>EMBO J.</i> <u>12</u> :3539-3550 (1993)
BS	Gurdon, J.B., "The Generation of diversity and pattern in animal development", <i>Cell</i> <u>68</u> :185-199 (1992)
BT	Gustin, K. et al., "Characterization of the role of individual protein binding motifs within the hepatitis B virus enhancer 1 on X promoter activity using linker scanning mutagenies", <i>Virology</i> <u>193</u> :653-660 (1993)
BU	Hall, T., et al., "A potential catalytic site revealed by the 1.7-A crystal structure of the amino-terminal signalling domain of Sonic hedgehog", <i>Nature</i> <u>378</u> (6553):212-216(Nov 1995)
BV	Halpern, M.E., et al., "Induction of muscle pioneers and floor plate is distinguished by the zebrasish <i>no tail</i> mutation", <i>Cell</i> <u>75</u> :99-111 (1993)
BW	Hamburger, V. and H.L. Hamilton, "A series of normal stages in the development of the chick embryo", <i>J. Morph.</i> <u>88</u> :49-92 (1951)

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		Applicant Ingham et al.			
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	BX	Hammerschmidt, M. et al., "The world according to hedgehog", <i>TIG</i> <u>13</u> (1):14-21 (1997)			
	BY	Haramis, A. et al., "The limb deformity mutation disrupts the SHH/FGF-4 feedback loop and regulation of 5-HoxD genes during limb pattern formation", <i>Devel.</i> <u>121</u> (12:4161-4170 (Dec 1995)			
	BZ	Hardy, A., et al., "Gene expression, polarising activity and skeletal patterning in reaggregated hind limb mesenchyme", <i>Devel.</i> <u>121</u> (12):4329-4337 (Dec 1995)			
	CA	Hatta, K. et al., "The cyclops mutation blocks specification of the floor plate of the zebrafish central nervous system", <i>Nature</i> <u>350</u> :339-341 (1991)			
	CB	Heberlein, U. et al., "The TGBB homolog <i>dpp</i> and the segment polarity gene <i>hedgehog</i> are required for propagation of a morphogenetic wave in the <i>Drosophila</i> retina", <i>Cell</i> <u>75</u> :913-926 (1993)			
	CC	Heemskerk, J. and S. DiNardo, "Drosophila patched gene encodes a putative membrane protein required for segmental patterning", <i>Cell</i> <u>59</u> :751-765 (1989)			
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	CG	Hynes, R.O., "Integrins: A family of Cell Surface Receptors", <i>Cell</i> <u>48</u> :549-554 (1987)			
	CH	Ingham, P.W. and A. Hidalgo, "Regulation of <i>wingless</i> transcription in the <i>Drosophila</i> embryo", <i>Devel.</i> <u>117</u> :283-291 (1993)			
	CI	Ingham, P.W., "Localized <i>hedgehog</i> activity controls spatial limits of <i>wingless</i> transcription in the <i>Drosophila</i> embryo", <i>Nature</i> <u>366</u> : 560-562 (1993).			
	CJ	Ingham, P.W. et al., "Role of the <i>Drosophila</i> <i>patched</i> gene in positional signalling", <i>Nature</i> <u>353</u> :184-187 (1991)			
	CK	Ingham, P.W., " <i>Hedgehog</i> points the way", <i>Current Biology</i> <u>4</u> (4):347-350 (1994)			
	CL	Ingham, P.W., "Signalling by hedgehog family proteins in <i>Drosophila</i> and vertebrate development", <i>Curr. Opin. Genet. Dev.</i> <u>5</u> (4): 492-498 (Aug 1995)			
	CM	Izpisua-Belmonte, J.-C. et al., "Expression of <i>Hox-4</i> genes in the chick wings links pattern formation to the epithelial-mesenchymal interactions that mediate growth", <i>EMBO J.</i> <u>11</u> :1451-1457(1992)			
	CN	Izpisua-Belmonte, J.-C. et al., "Expression of the homeobox <i>Hox-4</i> genes and the specification of position in chick wing development", <i>Nature</i> <u>350</u> :585-589 (1991)			

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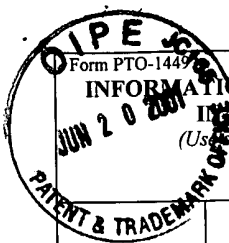
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DF		Lee, J.J. et al., "Secretion and localized transcription suggest a role in positional signaling for products of the segmentation gene <i>hedgehog</i> ", <i>Cell</i> <u>71</u> :33-50 (1992)	
DG		Lee, Se-Jin, "Expression of growth/differentiation factor 1 in the nervous system: Conservation of a bicistronic structure", <i>PNAS</i> <u>88</u> : 4250-54 (May 1991).	
DH		Lerner, R.A., Antibodies of predetermined specificity in biology and medicine, <i>Adv. Immunol.</i> , <u>36</u> : 1-44.	
DI		Levin, M. et al., "A molecular pathway determining left-right asymmetry in chick embryogenesis, <i>Cell</i> <u>82</u> (5):803-814 (Sept 1995)	
DJ		Li, W. et al., "Function of protein kinase A in hedgehog signal transduction and Drosophila imaginal disc development", <i>Cell</i> <u>80</u> (4):553-562 (Feb 1995)	
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DN		Ma, C. et al., "The segment polarity gene <i>hedgehog</i> is required for progression of the morphogenetic furrow in the developing Drosophila eye.", <i>Cell</i> <u>75</u> :927-938 (1993)	
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DP		Marigo, V. et al., "Biochemical evidence that patched is the hedgehog receptor", <i>Nature</i> <u>384</u> 176-179 (1996)	
DQ		Marti, E. et al., "Requirement of 19K form of Sonic hedgehog for induction of distinct ventral cell types in CNS explants", <i>Nature</i> <u>375</u> : 322-325 (1995).	
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DS		Mavillo, F. et al., "Activation of four homeobox gene clusters in human embryonal carcinoma cells induced to differentiate by retinoic acid.", <i>Differentiation</i> <u>37</u> :73-79 (1988)	
DT		McGinnis, W. and R. Krumlauf, "Homeobox genes and axial patterning", <i>Cell</i> <u>68</u> :283-302 (1992)	
DU		Mohler, J. and K. Vani, "Molecular organization and embryonic expression of the <i>hedgehog</i> gene involved in cell-cell communication in segmental patterning of <i>Drosophila</i> ", <i>Devel.</i> <u>115</u> :957-971 (1992)	
DV		Mohler, J., "Requirements for <i>hedgehog</i> , a segmental polarity gene, in patterning larval and adult cuticle of <i>Drosophila</i> ", <i>Genetics</i> <u>120</u> :1061-1072 (1988)	


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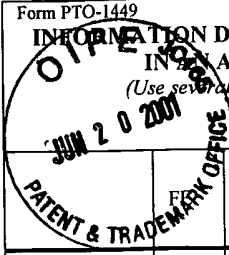
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DZ	Ngo, J. et al., "Computational Complexity, Protein Structure Prediction, and the Levinthal Paradox", in <i>The protein folding problem and tertiary structure prediction</i> (Merz and LeGrand, ed.), Birkhauser, Boston (1994).
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EB	Niswander, L. et al., "A positive feedback loop coordinates growth and patterning in the vertebrate limb", <i>Nature</i> <u>371</u> : 609-612 (Oct 1994).
EC	Nohno, T. et al., "Involvement of the <i>Chox-4</i> chicken homeobox genes in determination of anteroposterior axial polarity during limb development", <i>Cell</i> <u>64</u> :1197-1205 (1991)
ED	Nohno, T. et al., "Involvement of the Sonic hedgehog gene in chick feather formation", <i>Biochem. Biophys. Res. Comm.</i> <u>206</u> (1):33-39 (Jan 1995)
EE	O'Farrell, P.H. "Unanimity waits in the wings", <i>Nature</i> <u>368</u> :188-189 (1994)
EF	Parr, B.A. et al., "Mouse <i>Wnt</i> genes exhibit discrete domains of expression in the early embryonic CNS and limb buds", <i>Devel.</i> <u>199</u> :247-261 (1993)
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EH	Peifer, M., "The two faces of hedgehog", <i>Science</i> <u>266</u> (5190):1492-1493 (Dec 1994)
EI	Perrimon, N., "Hedgehog and beyond", <i>Cell</i> <u>80</u> :517-520 (24 Feb. 1995)
EJ	Pham, A. et al., "The suppressor of fused gene encodes a novel PEST protein involved in <i>Drosophila</i> segment polarity establishment", <i>Genetic</i> <u>140</u> (2):587-598 (June 1995)
EK	Placzek, M. et al., "Induction of floor plate differentiation by contact-dependent, homeogenetic signals", <i>Devel.</i> <u>117</u> :205-218 (1993)
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EN	Porter, J. et al., "The product of hedgehog autoproteolytic cleavage active in local and long-range signaling", <i>Nature</i> <u>374</u> (6520): 363-366 (Mar 1995)		
EO	Reeck et al., "Homology in proteins and nucleic acids: A terminology muddle and a way out of it", <i>Cell</i> , <u>50</u> :667 (1987)		
EP	Rennie, J., "Super Sonic", <i>Scientific American</i> : 20 (April 1994).		
EQ	Riddle, R.D. et al., "Induction of the LIM homeobox gene Lmx1 by WNT7 a establishes dorsoventral pattern in the vertebrate limb", <i>Cell</i> <u>83</u> (6553):212-216 (Nov 1995)		
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EW	Sambrook et al., <u>Molecular Cloning CSH</u> :11.47 (1989)		
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	FH	Tanabe, Y. et al., "Induction of motor neurons by Sonic hedgehog is independent of floor plate differentiation", <i>Curr. Biol.</i> 5 (6): 651-658 (June 1995)			
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	FT	Wanek, N. et al., "Conversion by retinoic acid of anterior cells into ZPA cells in the chick wing bud", <i>Nature</i> 350 :81-83 (1991)			
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	FZ	Zardoya et al., "Evolution and orthology of hedgehog genes", <i>TIG</i> 12 (12):496-467 9199)			
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